

Claims

1. A method of vaccinating an individual comprising the steps of:

(c) vaccinating the individual with a first vaccine composition on one or more occasions, characterised in that said vaccine comprises an antigen but does not comprise an imidazo [4,5-c] quinolin – 4 – amine derivative, and

(d) after waiting an appropriate length of time, vaccinating the same individual one of more times with a second vaccine, characterised in that the second vaccine composition comprises the same antigen as the first vaccine, the second vaccine being administered with an imidazo [4,5-c] quinolin – 4 – amine derivative.

2. The method of vaccinating an individual as claimed in claim 1 further comprising a repeat of step (a) after step (b).

3. The method of vaccinating an individual as claimed in claim 1 wherein the second vaccine composition comprising the imidazo [4,5-c] quinolin – 4 – amine derivative is the final vaccine dose administered.

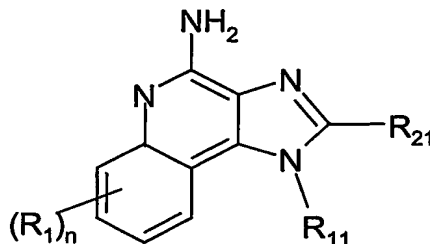
4. Use of an imidazo [4,5-c] quinolin – 4 – amine derivative and an antigen in the manufacture of a booster dose of a vaccine medicament for administration to an individual, characterised in that the individual previously received a priming dose of the vaccine medicament comprising the same antigen but which did not comprise an imidazo [4,5-c] quinolin – 4 – amine derivative.

5. A vaccine administration device comprising an antigen and an imidazo [4,5-c] quinolin – 4 – amine derivative, the device being packaged together with an instruction leaflet advising that the administration device is used to administer the vaccine composition only to individuals that had previously received a vaccine comprising the same antigen but which did not comprise an imidazo [4,5-c] quinolin – 4 – amine derivative.

6. A kit comprising a first vaccine composition and a second vaccine composition, wherein the first vaccine composition and the second composition contain the same antigen characterised in that the second vaccine composition comprises an imidazo [4,5-c] quinolin – 4 – amine derivative.

7. A method as claimed in claim 1 wherein the antigen and imidazo [4,5-c] quinolin – 4 – amine derivative are administered substantially simultaneously.

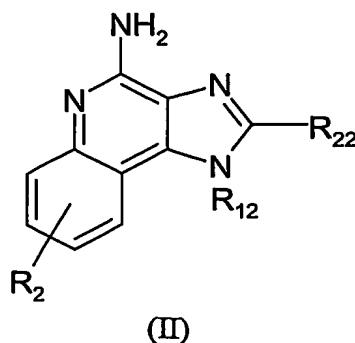
8. A method according to claim 1 or 2 wherein the 1H-imidazo[4,5-c]quinolin-4-amine derivative is a compound defined by one of formulae I-VI:



(I)

wherein

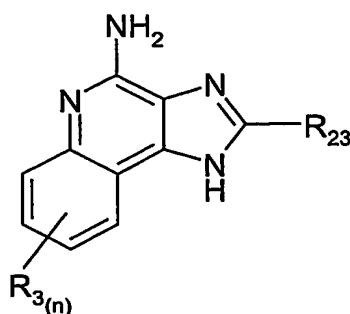
R_{11} is selected from the group consisting of straight or branched chain alkyl, hydroxyalkyl, acyloxyalkyl, benzyl, (phenyl)ethyl and phenyl, said benzyl, (phenyl)ethyl or phenyl substituent being optionally substituted on the benzene ring by one or two moieties independently selected from the group consisting of alkyl of one to about four carbon atoms, alkoxy of one to about four carbon atoms and halogen, with the proviso that if said benzene ring is substituted by two of said moieties, then said moieties together contain no more than 6 carbon atoms; R_{21} is selected from the group consisting of hydrogen, alkyl of one to about eight carbon atoms, benzyl, (phenyl)ethyl and phenyl, the benzyl, (phenyl)ethyl or phenyl substituent being optionally substituted on the benzene ring by one or two moieties independently selected from the group consisting of alkyl of one to about four carbon atoms, alkoxy of one to about four carbon atoms and halogen, with the proviso that when the benzene ring is substituted by two of said moieties, then the moieties together contain no more than 6 carbon atoms; and each R_1 is independently selected from the group consisting of hydrogen, alkoxy of one to about four carbon atoms, halogen and alkyl of one to about four carbon atoms, and n is an integer from 0 to 2, with the proviso that if n is 2, then said R_{11} groups together contain no more than 6 carbon atoms;



wherein

R_{12} is selected from the group consisting of straight chain or branched chain alkenyl containing 2 to about 10 carbon atoms and substituted straight chain or branched chain alkenyl containing 2 to about 10 carbon atoms, wherein the substituent is selected from the group consisting of straight chain or branched chain alkyl containing 1 to about 4 carbon atoms and

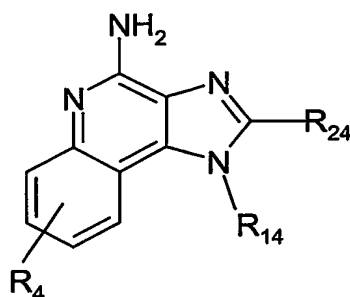
cycloalkyl containing 3 to about 6 carbon atoms; and cycloalkyl containing 3 to about 6 carbon atoms substituted by straight chain or branched chain alkyl containing 1 to about 4 carbon atoms; and R_{22} is selected from the group consisting of hydrogen, straight chain or branched chain alkyl containing one to about eight carbon atoms, benzyl, (phenyl)ethyl and phenyl, the benzyl, (phenyl)ethyl or phenyl substituent being optionally substituted on the benzene ring by one or two moieties independently selected from the group consisting of straight chain or branched chain alkyl containing one to about four carbon atoms, straight chain or branched chain alkoxy containing one to about four carbon atoms, and halogen, with the proviso that when the benzene ring is substituted by two such moieties, then the moieties together contain no more than 6 carbon atoms; and each R_2 is independently selected from the group consisting of straight chain or branched chain alkoxy containing one to about four carbon atoms, halogen, and straight chain or branched chain alkyl containing one to about four carbon atoms, and n is an integer from zero to 2, with the proviso that if n is 2, then said R_2 groups together contain no more than 6 carbon atoms;



(III)

wherein

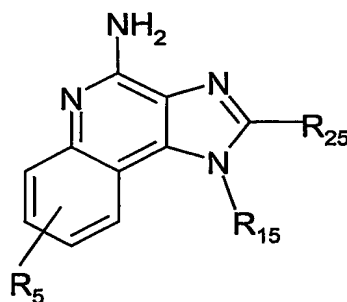
- 5 R_{23} is selected from the group consisting of hydrogen, straight chain or branched chain alkyl of one to about eight carbon atoms, benzyl, (phenyl)ethyl and phenyl, the benzyl, (phenyl)ethyl or phenyl substituent being optionally substituted on the benzene ring by one or two moieties independently selected from the group consisting of straight chain or branched chain alkyl of one to about four carbon atoms, straight chain or branched chain alkoxy of one to about four carbon atoms, and halogen, with the proviso that when the benzene ring is substituted by two such moieties, then the moieties together- contain no more than 6 carbon atoms; and each R_5 is independently selected from the group consisting of straight chain or branched chain alkoxy of one to about four-carbon atoms, halogen, and 30 straight chain or branched chain alkyl of one to about four carbon atoms, and n is an integer from zero to 2, with the proviso that if n is 2, then said R_3 groups together contain no more than 6 carbon atoms;



(IV)

- 20 wherein

R_{14} is $-\text{CHR}_A\text{R}_B$ wherein R_B is hydrogen or a carbon-carbon bond, with the proviso that when R_B is hydrogen R_A is alkoxy of one to about four carbon atoms, hydroxyalkoxy of one to about four carbon atoms, 1-alkynyl of two to about ten carbon atoms, tetrahydropyranyl, alkoxyalkyl wherein the alkoxy moiety contains one to about four carbon atoms and the alkyl moiety contains one to about four carbon atoms, 2-, 3-, or 4-pyridyl, and with the further proviso that when R_B is a carbon-carbon bond R_B and R_A together form a tetrahydrofuranyl group optionally substituted with one or more substituents independently selected from the group consisting of hydroxy and hydroxyalkyl of one to about four carbon atoms; R_{24} is selected from the group consisting of hydrogen, alkyl of one to about four carbon atoms, phenyl, and substituted phenyl wherein the substituent is selected from the group consisting of alkyl of one to about four carbon atoms, alkoxy of one to about four carbon atoms, and halogen; and R_4 is selected from the group consisting of hydrogen, straight chain or branched chain alkoxy containing one to about four carbon atoms, halogen, and straight chain or branched chain alkyl containing one to about four carbon atoms;



(V)

wherein

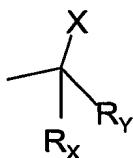
R_{15} is selected from the group consisting of: hydrogen; straight chain or branched chain alkyl containing one to about ten carbon atoms and substituted straight chain or branched chain alkyl containing one to about ten carbon atoms, wherein the substituent is selected from the group consisting of cycloalkyl containing three to about six carbon atoms and cycloalkyl containing three to about six carbon atoms substituted by straight chain or branched chain alkyl containing one to about four carbon atoms; straight chain or branched chain alkenyl containing two to about ten carbon atoms and substituted straight

chain or branched chain alkenyl containing two to about ten carbon atoms, wherein the substituent is selected from the group consisting of cycloalkyl containing three to about six carbon atoms and cycloalkyl containing three to about six carbon atoms substituted by straight chain or branched chain alkyl containing one to about four carbon atoms;

5 hydroxyalkyl of one to about six carbon atoms; alkoxyalkyl wherein the alkoxy moiety contains one to about four carbon atoms and the alkyl moiety contains one to about six carbon atoms; acyloxyalkyl wherein the acyloxy moiety is alkanoyloxy of two to about four carbon atoms or benzoyloxy, and the alkyl moiety contains one to about six carbon atoms; benzyl; (phenyl)ethyl; and phenyl; said benzyl, (phenyl)ethyl or phenyl substituent
10 being optionally substituted on the benzene ring by one or two moieties independently selected from the group consisting of

alkyl of one to about four carbon atoms, alkoxy of one to about four carbon atoms, and halogen, with the proviso that when said benzene ring is substituted by two of said moieties, then the moieties together contain no more than six carbon atoms;

15 R_{25} is

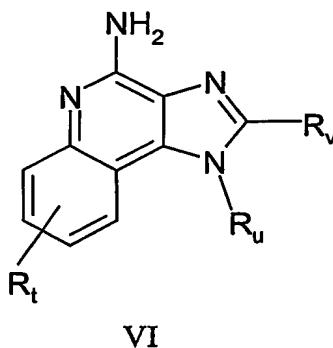


wherein

R_X and R_Y are independently selected from the group consisting of hydrogen, alkyl of one
20 to about four carbon atoms, phenyl, and substituted phenyl wherein the substituent is elected from the group consisting of alkyl of one to about four carbon atoms, alkoxy of one to about four carbon atoms, and halogen; X is selected from the group consisting of alkoxy containing one to about four carbon atoms, alkoxyalkyl wherein the alkoxy moiety contains one to about four carbon atoms and the alkyl moiety contains one to
25 about four carbon atoms, haloalkyl of one to about four carbon atoms, alkylamido wherein the alkyl group contains one to about four carbon atoms, amino, substituted amino wherein the substituent is alkyl or hydroxyalkyl of one to about four carbon atoms, azido, alkylthio of one to about four carbon atoms; and R_5 is selected from the group

consisting of hydrogen, straight chain or branched chain alkoxy containing one to about four carbon atoms, halogen, and straight chain or branched chain alkyl containing one to about four carbon atoms;

5



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Wherein

R_t is selected from the group consisting of hydrogen, straight chain or branched chain alkoxy containing one to about four carbon atoms, halogen, and straight chain or branched chain alkyl containing one to about four carbon atoms;

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R_u is 2-methylpropyl or 2-hydroxy-2-methylpropyl; and

R_v is hydrogen, alkyl of one to about six carbon atoms, or alkoxyalkyl wherein the alkoxy moiety contains one to about four carbon atoms and the alkyl moiety contains one to about four carbon atoms.

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or a pharmaceutically acceptable salt of any of the foregoing.